

## REMARKS

Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

### Claims Status

Claims 1 and 4 through 6 remain pending in the application and have been amended to even more succinctly define the invention and/or to improve their form. Claim 2 has been cancelled. It is respectfully submitted that no new matter has been added. Claim 1 is the only independent claim in the application.

### Claim Objections

Claims 1 and 2 have been objected to for the reasons succinctly set forth in the Official Action. The Examiner notes that Claim 2 does not further limit Claim 1. In response, Claim 2 has been canceled, and Claim 1 has been amended *inter alia* to overcome the grounds of the objection. It is respectfully submitted that the objections have been overcome.

### Art Rejections

Claims 1, 2, and 4 through 6 are rejected under the nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 2, and 4 through 8 of U.S. Patent No. 6,771,920 (Abe, et al.) in view of U.S. Patent No. 4,967,231 (Hosoya, et al.).

Claims 1, 2, and 4 through 6 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0161664 (Abe, et al.) in view of Hosoya, et al.

The rationale underlying the rejections is succinctly set forth in the Official Action.

#### Response to Rejections

While not conceding the propriety of the rejections, Claim 1 has been amended to even more succinctly define the invention. Specifically, Claim 1 now recites a charging roller for a contact charging assembly, the charging roller includes a conductive substrate; an elastic layer which covers the periphery of the conductive substrate; and a seamless tube externally so fitted as to cover the periphery of the elastic layer, wherein the charging roller has a surface of 3.0  $\mu\text{m}$  or less in ten-point average roughness  $R_z$  jis 94, and 0.04 mm or more and 0.10 mm or less in roughness curve average length  $R_{Sm}$ . The seamless tube constitutes a surface layer of the charging roller and includes: (A) a thermoplastic styrene elastomer; and (B) a high-impact-resistant polystyrene (HIPS) and rubber particles, wherein a proportion of the component (A) to the composition (B) is (A)/(B) in a range of 80/20 to 40/60 in weight ratio.

Amended Claim 1 further defines the invention by reciting (i) that the high-impact polystyrene (HIPS) contains rubber particles. (See page 9, lines 4 through 18 of the specification.), and (ii) that 0.04 mm is the lower limit of the roughness curve average length  $R_{Sm}$ . (See page 8, lines 13 through 16 of the specification.)

As stated in the specification at page 10, line 24 to page 11, line 8, the rubber particles contained in the HIPS has the effect of bringing the  $R_{Sm}$  (roughness curve average distance of irregularity average distance) into a range of 0.10 mm or less. The rubber particles serve to reduce the  $R_{Sm}$  and lessen the surface area of the roller coming into contact with the toner and external additives. As a result, the adhesion of the toner and

external additives to the surface of the roller is minimized. Thus, the rubber particles play a very important roll in the performance of the roller.

In Abe, et al there is no discussion whatsoever of using rubber particles and the meritorious effect exhibited thereby. Accordingly, it is respectfully submitted that it would not be obvious to modify the teachings of Abe, et al. to use HIPS containing rubber particles.

Regarding the roughness curve average length RSm, Hosoya et al. only mentions that “The average value of pitch of concaves and convexes in the surface is desired to be no more than 10 μm.” (See column 14, lines 52 through 54 of Hosoya et al.)

In the claimed invention, RSm is in the range of from 0.04 mm to 0.10 mm, which is outside the range of “no more than 10 μm” as disclosed in Hosoya, et al.

Moreover, the Examiner’s attention is directed to the following portions of Hosoya, et al. describing the surface roughness:

“The surface roughness of the elastic electroconductive roller is desired to be no more than 6 μm Rz (average roughness of point 10 by JIS scale).” (See column 14, lines 48 through 50.);

“The elastic electroconductive rollers 21 with 5.2 μm and 9.3 μm of surface roughness produced images lacking sharpness and tending to show a sign of fogging.” (See column 31, lines 1 through 4.);

“Those with no more than 3.0 μm of surface roughness produced images invariably tolerable in sharpness, density, and freedom from fogging.” (See column 31, lines 4 through 7.);

“The surface roughness of the elastic electroconductive roller 21 is desired to be no more than 3.0  $\mu\text{m}$ .” (See column 31, lines 15 through 17.); and

“The developing device of claim 4, wherein the roughness of the surface of said toner carrier is no more than 3  $\mu\text{m}$ .” (See column 31, lines 14 and 15; and See Claim 5.)

Applicants respectfully submit that the foregoing descriptions are inconsistent, and it is unclear which descriptions are accurate. Even if the description that the roughness of the surface is “no more than 3  $\mu\text{m}$ ” is accurate, that description in Hosoya, et al. is directed to an electroconductive roller as a toner carrier (or a developing roller); Hosoya, et al. is not directed to a surface roughness of a charging roller as recited in amended Claim 1.

Accordingly, the significance of the surface roughness differs between Hosoya, et al. and the claimed invention because of different considerations involving the role and performance of these different structures. Specifically, the surface roughness in Hosoya, et al. is defined in consideration of the rolling motion and sliding motion of the toner particles, whereas the surface roughness in the claimed invention is defined in consideration of uniform charging of toner. Accordingly, it is respectfully submitted that it would not be obvious to apply the teachings of Hosoya, et al. in connection with an electroconductive roller as a toner carrier to a charging roller.

In both rejections, the Examiner recognizes that Abe, et al. does not disclose that the charging roller has surface of 3.0 mm or less in 10-point average roughness  $R_z$  jis 94, and 0.10 mm or less in a roughness curve average length  $R_{Sm}$ , which is allegedly taught by Hosoya, et al.

A combination rejection is proper only when there is some suggestion or motivation in the art *per se* for one having ordinary skill in the art to combine the teachings of the cited art. There is nothing in the cited art which supports the position that it can be combined in the manner suggested. Rather, the Examiner has provided a rationalization for combining the teachings of Hosoya, et al. with the teachings of Abe, et al. The Examiner directs attention to the Abstract of Hosoya, et al. for supporting the combination rejection. However, the portion of the abstract mentioned by the Examiner, i.e., the last sentence of the Abstract, merely asserts benefits of providing an elastic electroconductive roller composed of an elastic base roller and a flexible conductor layer, which is not understood to relate to the portion of Hosoya, et al. identified by the Examiner i.e., column 14, lines 44 through 54 set forth at page 3 of the Official Action. Even if the art could be so combined, the mere fact that the art can be combined is not sufficient if there is no suggestion in the art that such a combination is desirable.

In view of the foregoing, it is respectfully submitted that the double-patenting rejection and Section 103 rejection of amended Claim 1 have been overcome.

#### Dependent Claims

Claims 4 through 6 depend either directly or indirectly from Claim 1 and are allowable by virtue of their dependency and in their own right for further defining Applicants' invention. Individual consideration of the dependent claims is respectfully requested.

### Closing Comments

It is respectfully submitted that the pending claims are allowable over the art of record and that the application is in condition for allowance. Favorable reconsideration and early passage to issue of the present application are earnestly solicited.

Applicants' undersigned attorney, William M. Wannisky, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our New York office at the address shown below.

Respectfully submitted,

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